COMMONWEALTH OF VIRGINIA
Department of Environmental Quality
Piedmont Regional Office

STATEMENT OF LEGAL AND FACTUAL BASIS

Hopewell Regional Wastewater Treatment Plant
Hopewell, Virginia
Permit No. 50735

Title V of the 1990 Clean Air Act Amendments required each state to develop a permit program to ensure that certain facilities have federal Air Pollution Operating Permits, called Title V Operating Permits. As required by 40 CFR Part 70 and 9 VAC 5 Chapter 80, the Hopewell Regional Wastewater Treatment Plant has applied for a Title V Operating Permit for its Hopewell facility. The Department has reviewed the application and has prepared a draft Title V Operating Permit.

Engineer/Permit Contact:_____ Date:_____

Air Permit Manager:_____ Date:_____

Regional Permit Manager:_____ Date:_____

FACILITY INFORMATION

Hopewell Regional Wastewater Treatment Plant
P.O. Box 969
Hopewell, Virginia 23860

231 Hummel Ross Road

AIRS ID No. 51-670-0053

SOURCE DESCRIPTION

SIC Code: 4952 – Industrial/Municipal Wastewater Treatment

The facility is a publicly owned treatment works (POTW) which treats domestic and industrial wastewaters. The facility has a design flow rate capacity of 50 million gallons per day and currently treats an average influent flow of 32 million gallons of wastewater per day. The treatment processes consist of wet stream units and solids handling facilities. The treated wastewaters are discharged into Gravelly Run which flows into the James River.

The facility is a Title V major source of VOC. This source is located in an attainment area for all pollutants, and is a PSD minor source. The facility was previously permitted under a Minor NSR Permit issued on December 2, 1974 (amended December 10, 1974).

COMPLIANCE STATUS

The facility is inspected once a year. The facility was last inspected on August 4, 1999, and it was deemed to be in compliance.

EMISSION UNIT AND CONTROL DEVICE IDENTIFICATION

The emissions units at this facility consist of the following :

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity*	Pollution Control Device (PCD) Description	PCD ID	Pollutant Controlled
2	S1	Grit Chambers (three units)	50 million gallons per day	Aluminum covers	-	VOC/HAPs
3	S1	Parshall Flume		Aluminum covers	-	VOC/HAPs
4	-	Supernatant Return Discharge				
5	-	Primary Clarifiers/ denitrification (eight units)				
6	S2	UNOX System (four trains)				
7	-	Secondary Clarifiers (eight units)				
11	S3	Sludge Holding Tanks (two units)				
12	S4	Centrifuges (two units)	6,500 lb/hr (dry sludge @30% solids)			
13	S5/S6	Multiple Hearth Furnace (Sludge Incinerator)	6,500 lb/hr (dry sludge @30% solids)	Afterburner	S5-1	VOC/HAPs
13	S5/S6	Multiple Hearth Furnace (Sludge Incinerator)	6,500 lb/hr (dry sludge @30% solids)	Venturi Scrubber	S5-2	Particulate Matter
13	S5/S6	Multiple Hearth Furnace (Sludge Incinerator)	6,500 lb/hr (dry sludge @30% solids)	Impingement Scrubber	S5-3	Particulate Matter

14		Solids Handling Buildings (fugitive losses)	6,500 lb/hr (dry sludge @30% solids)			
15a-c		Three Diesel-fired Pumps (non-standby use)	<100 hp each			

EMISSIONS INVENTORY

Actual emissions from the source are summarized as follows for the year 1998: 69 tons/yr of VOC, 20 tons/yr of CO, 23 tons/yr of Methanol (HAP), and 33 tons/yr of Total HAPs.

EMISSION UNIT APPLICABLE REQUIREMENTS – Grit Chambers and Parshall Flume (Reference Numbers 2 and 3)

Limitations
The limitations for the three Grit Chambers (Ref.#2) and the Parshall Flume (Ref.#3) come from the facility's 1996 RACT agreement that was written into Virginia's State Implementation Plan to comply with 9 VAC 5-40-300 of State Regulations (Standard for Volatile Organic Compounds). The limitations in the RACT document (attached) are as follows:

Section E: Agreement

2. VOC emissions from the Grit Chambers/Parshall Flume shall be controlled by a cover and vent.

This RACT limitation is the only specific limitation which applies to the Grit Chambers and Parshall Flume. In addition, as VOC RACT for the rest of the facility was deemed to be no additional control, the RACT document contains no specific limitations for any other equipment at the facility.

Monitoring/Recordkeeping
Although the RACT document specifies that the VOC emission control covers be installed within 24 months of the document's signature date (which was accomplished per the source's Title V application: 1996 RACT date – 1997 cover installation), no further monitoring was specified.

To satisfy Title V Periodic Monitoring requirements, the source will be required to conduct annual structural integrity inspections on the covers. In addition, recordkeeping of the inspections, their results, and any corrective actions will be required.

EMISSION UNIT APPLICABLE REQUIREMENTS – Multiple Hearth Furnace (Sludge Incinerator) (Reference Number 13)

Limitations

The limitations for the Multiple Hearth Furnace come from four sources: Rule 4-7 (Emission standards for Incinerators) of the existing source standards section of Virginia's Regulations, one Environmental Protection Agency (EPA) New Source Performance Standard (NSPS); O (Standards of Performance for Sewage Treatment Plants), one EPA National Emission Standards for Hazardous Air Pollutants (NESHAP); Subpart E (Mercury), and the source's minor New Source Review permit issued by DEQ on December 10, 1974. Of these four, two (the 1974 permit and Mercury NESHAP) contain the same mercury emission standard, 3,200 g/24-hrs. The 1974 permit basically copied this standard from the NESHAP. Since the mercury standard was the only non-obsolete or non-environmentally insignificant requirement from the 1974 permit, the mercury NEHSAP will henceforth be treated as the source of the 3,200 standard and the 1974 permit requirement (and the permit itself) will be considered to be streamlined. None of these five sources contain requirements that apply to any emission unit at HRWTP other than the Multiple Hearth Furnace.

The limitations that apply to the Multiple Hearth Furnace (MHF) are then as follows (broken down by requirement source):

<u>Mercury NESHAP:</u>
- 3,200 grams Mercury per 24-hr period.

<u>NSPS Subpart O:</u>
- 0.65 grams of Particulate Matter per kilogram of dry sludge incinerated
- 20% opacity

<u>Rule 4-7:</u>
- 0.14 grains of Particulate Matter per dry standard cubic foot of exhaust gas, @12% CO2

Monitoring/Recordkeeping

Periodic Monitoring sufficient to give a reasonable assurance of compliance with the emission limitations listed above are as follows:

<u>Mercury NESHAP:</u>
Other than initial testing, no specific monitoring is required by the NESHAP for most sources. This initial testing was performed in 1993, and the HRWTP was found to be in compliance. Periodic Monitoring for these requirements will therefore be periodic (once/yr) sampling of sludge charged to the MHF for Mercury and recordkeeping of this sampling, the sampling results, and any corrective actions.

NSPS Subpart O – 0.65 g/kg emission standard:
This NSPS includes also includes initial testing requirements. The initial testing was performed in 1989, and the facility was found to be in compliance. However, the NSPS also includes extensive monitoring, recordkeeping, and reporting requirements. Taken together, these existing requirements are deemed to be sufficient to satisfy periodic monitoring requirements for the NSPS emission standard. These include:

- a Continuous Monitor (CM) to measure the mass or volume of sludge charged to the MHF.
- a CM to measure the mass of any municipal solid waste charged to the MHF (inapplicable to this facility since the unit/facility are physically incapable of firing municipal solid waste, i.e. no waste incinerator feed mechanism).
- a CM to measure the oxygen content of the incinerator exhaust gas.
- a CM to measure the pressure drop through the scrubber system.
- a CM to measure the temperature at each hearth of the MHF.
- a CM to measure the fuel flow to the MHF.
- daily sampling of sludge feed for dry sludge content and volatile solids content.
- recordkeeping of the data of each above item.
- Semiannual reporting of scrubber system pressure drop and exhaust gas oxygen content deviations.

The only thing that will be added is the requirement for the source to take corrective action when one of the monitored parameters indicates sub-optimal performance (as compared to the data obtained in the 1989 stacktest). Operation of the MHF while the above parameters are within the ranges established during the 1989 stacktest will be deemed to be good/normal operation of the MHF and its control system which in turn is deemed to be reasonable assurance that the MHF is complying with the 0.65 g/kg NSPS standard (as it was during the 1989 stacktest).

NSPS Subpart O – 20% opacity standard:
The periodic monitoring protocol outlined above for the NSPS emission standard should provide reasonably reliable assurance that the MHF and it control system are operating correctly. Weekly opacity observations of the MHF stacks (along with recordkeeping of results of the observations and any corrective actions taken) are the only additional periodic monitoring required for the opacity standard.

Rule 4-7 – 0.14 grains/dscf emission standard:
The monitoring requirements required for the NSPS emission standard are again deemed be sufficient to reasonably guarantee proper operation of the MHF and its control system. As the 1989 stacktest data showed, a properly operating system easily complies with the Rule 4-7 standard. The NSPS monitoring requirements are therefore deemed to be Periodic Monitoring for the Rule 4-7 standard as well.

Streamlined Requirements

The following otherwise applicable requirements have not been included in the T-V permit because of the existence of more stringent requirements:

The 3,200 g/24-hr mercury standard from the 10/74 permit has not been included in the T-V permit since an identical standard is being incorporated into the T-V permit from the mercury NESHAP.

Neither the Rule 4-1 or Rule 5-1 opacity standards apply to the MHF, since the MHF is subject to the more stringent NSPS Subpart O opacity standard.

EMISSION UNIT APPLICABLE REQUIREMENTS – UNOX System (biological treatment system) (four trains) (Reference No. 6)

The source of the applicable requirements for the UNOX System is a new EPA standard: 40 Part 63 Subpart VVV – National Emission Standards for Hazardous Air Pollutants: Publicly Owned Treatment Works (Section 63.1580 through 63.1595). This standard is commonly known as the POTW MACT (Maximum Achievable Control Technology) Standard. For HRWTP, an existing industrial POTW Plant as defined in the MACT, the requirements of the POTW MACT are as follows: the source has to meet the wastewater treatment requirements of any other MACT standard that may apply to any wastewater stream from the industrial sources that discharge to the HRWTP. Only one such wastewater stream has been identified at this time: one stream from Stone Container Corporation that is subject to the Pulp and Paper Mill MACT standard (40 CFR 63, Subpart S). Since the HRWTP's UNOX System treat kraft pulping process condensates, as defined in Subpart S, they qualify as a biological treatment system under Subpart S as well. As such, the UNOX System must meet the following requirements:

Limitations

- discharge the pulping process condensate below the liquid surface of a biological treatment system meeting the requirement specified in paragraph (e)(3) of this section

40 CFR 63.446(e)(2) (Standards for kraft pulping process condensates)

- treat the pulping processes condensates to reduce or destroy the total HAPs by at least 92 percent or more by weight

40 CFR 63.446(e)(3)

Monitoring/Recordkeeping/Testing

Periodic Monitoring sufficient to give a reasonable assurance of compliance with the emission limitations listed above are as follows:

MACT Subpart S:

According to EPA periodic monitoring guidance, NSPS and MACT standards promulgated after 1993 are considered to have sufficient testing, monitoring, and recordkeeping requirements written into such documents to meet the T-V periodic monitoring. Since Subpart S was first promulgated in 1997, the monitoring, etc. requirements within Subpart S are considered to be sufficient periodic monitoring for the above standards. The UNOX System used by the source does not have any specific monitoring in Subpart S, however. Subpart S contains monitoring requirements for open-style treatment tanks, but not for closed-style treatment such as the source's UNOX system. Subpart S requires that closed UNOX tank operators submit an alternative monitoring plant to the U.S. EPA for approval on a case-by-case site specific basis. The source has made such a submittal, the most recent version being dated July 25, 2001 (attached) as amended September 25, 2001 (attached). The applicable monitoring requirements

are as follows:

- Each owner or operator using a biological treatment system to comply with 63.446(e)(2) shall install, operate and maintain continuous monitoring devices for the following parameters for the UNOX System when receiving regulated wastewater:

    - UNOX system oxygen supply flow rate;
    - Horsepower of UNOX system aerators;
    - UNOX system vent gas purity;
    - Regulated wastewater inlet flow to the UNOX system; and
    - Total Inlet liquid flow to UNOX system.

(40 CFR 63.453(j)(2))

- Obtain daily inlet and outlet liquid grab samples from the UNOX system. Perform the following procedures:
    - Store samples for 5 days as specified
    - Perform a percent reduction test within 45 days after the beginning of each quarter as follows:
        - The percent reduction test performed in the first quarter (annually) shall be performed for both methanol and non-methanol HAP mass in order to calculate the ration of methanol to non-methanol HAP, "r".
        - The remaining quarterly percent reduction tests in a given year shall be performed for methanol, and compliance with the overall HAP standard shall be calculated using the "r" value calculated in the first quarterly compliance test for that year.
        - The parameter values used to calculate the percent reductions required above shall be the parameter values measured and sampled from 63.453(j)(1).

(40 CFR 63.453(j)(1)(ii)(A-B) and 40 CFR 63.453(j)(3))

- The owner or operator shall establish the value of each operating parameter required to be monitored in 63.453(j) by continuously recording each operating parameter during the initial performance test required by 63.457(a) with determinations being based on the control performance and the parameter data monitored during the performance test, supplemented if necessary bye engineering assessments and the manufacturer's recommendations. A rationale for the selected operating parameter value, the monitor frequency, and averaging time shall be included

(40 CFR 63.453(n))

- The source shall operate the UNOX system in a manner consistent with the minimum or maximum operating parameter value or procedure required to be monitored under 63.453(j).

(40 CFR 63.453(o))

- The source shall perform the following when the monitoring parameters specified in 63.453(j) are below minimum operating parameter values established in 63.453(n):

  - Determine compliance with 63.446(e)(3) by the test procedures of 63.457(l) and the monitoring data of 63.453(j) that coincide with the parameter excursion

  - Take steps to repair or adjust the operation of the process to end the parameter excursion period; and

  - Take steps to minimize total HAP emissions to the atmosphere during the parameter excursion period.

  The results of performance test required by a. of this Condition and the procedures specified in 63.453(p)(2) shall be used to determine compliance with 92 percent HAP reduction standard for the monitoring parameter excursion period.

(40 CFR 63.453(p))

- An initial performance test for the UNOX system shall be performed for percent HAP removal. Sampling locations and procedures for the performance test shall be in conformance with 40 CFR 63.457(c). The percent HAP reduction of the HPO tanks shall be calculated as stated in 40 CFR 63.457(l). Samples shall be stored as described in 40 CFR 63.457(n).

(40 CFR 63.457(a),(c),(l),(n))

EMISSION UNIT APPLICABLE REQUIREMENTS – Diesel-fired Pumps (Reference No. 15a-c)

The facility uses three diesel-fired pumps for contingency operation. Each is less than 100 hp. Since these pumps do not meet any of the qualifications for insignificant emission units under 9 VAC 5-80-710, they are significant emission units. The only source of applicable requirements of them is the new and modified source visible emission standard, Rule 5-1 (9 VAC 5-50-80), which limits affected sources to 20% opacity (except for one 6-minute period in any 1-hour in which visible emissions shall not exceed 30% opacity).

Since violations of the 20% opacity standard are not expected for small distillate oil-firing engines of this type, periodic monitoring shall be weekly opacity observations of the pump stacks (along with recordkeeping of results of the observations and any corrective actions taken).

GENERAL CONDITIONS

The permit contains general conditions required by 40 CFR Part 70 and 9 VAC 5-80-110, that apply to all Federal operating permit sources. These include requirements for submitting semi-annual monitoring reports and an annual compliance certification report. The permit also requires notification of deviations from permit requirements or any excess emissions, including those caused by upsets, within one business day.

STATE ONLY APPLICABLE REQUIREMENTS

No specific state-only requirements were identified.

FUTURE APPLICABLE REQUIREMENTS

No future applicable requirements were identified

INAPPLICABLE REQUIREMENTS

The Rule 4-4 general process particulate standard does not apply to the MHF, as per 9 VAC 5-40-240 D, because the MHF falls under a more specific Part IV standard, the Rule 4-7 particulate standard. Similarly, the Rule 4-4 particulate standard does not apply to the Godwin pump because the standard is based on a unit's process weight rate. As the Rule 4-4 definition of process weight excludes liquid fuels (such as distillate oil), the process weight rate of the Godwin Pump is zero, and thus the pump has no Rule 4-4 particulate standard.

COMPLIANCE PLAN

As this facility certified compliance with all requirements in their application, no compliance plan was necessary.

INSIGNIFICANT EMISSION UNITS

The insignificant emission units are presumed to be in compliance with all requirements of the Clean Air Act as may apply. Based on this presumption, no monitoring, recordkeeping or reporting shall be required for these emission units in accordance with 9 VAC 5-80-110.

Insignificant emission units include the following:

Emission	Emission Unit	Citation	Pollutant(s)	Rated Capacity

Unit No.	Description		Emitted (9 VAC 5-80-720 B)	(9 VAC 5-80-720 C)
100	Bar screen conveyor and storage bin	9 VAC 5-80-270 B	TSP/PM10	
101	Grit handling system			
102	Ash handling system			
103	Cake Storage Pad			
1	Bar Screens		VOC	
8	Gravity Thickeners			
9	Dissolved Air Flotation Thickeners			
10	Supernatant Return Wetwell			
104	Degreasing Unit			
105	Primary sludge pump station vault vent			
106	Gravity thickener basement vent			
107	Dissolved air flotation thickener louver vent			
108	Hypochlorite system			
109	Non-potable water wetwells			
110	Basement moyno pump vent			
111	Emergency stand-by air compressor	9 VAC 5-80-720 C		75 HP

[1]The citation criteria for insignificant activities are as follows:
9 VAC 5-80-720 A - Listed Insignificant Activity, Not Included in Permit Application
9 VAC 5-80-720 B - Insignificant due to emission levels
9 VAC 5-80-720 C - Insignificant due to size or production rate

CONFIDENTIAL INFORMATION

The permittee did not submit a request for confidentiality. All portions of the Title V application

are suitable for public review.

PUBLIC PARTICIPATION

The draft permit went to public notice in the Richmond Times-Dispatch on October 2, 2001. The 30-day comment period specified in the public notice ran from October 3, 2001 until November 1, 2001. The only comments received were from the source, Hopewell Regional Wastewater Treatment Facility. These comments (attached) were mostly clarifications and requests that the permit be updated to reflect the nomenclature used in the most recent version of Subpart S (this MACT was amended in December 2000). To the extent which the source's comments involved the correction of nomenclature, clarity and format, they were incorporated into the permit. However, no changes were made to any emission standard or monitoring requirements.